

**ABSTRACT OF THE DISCLOSURE**

Optical fiber illuminators are embodied in light-diffusing particles affixed to an optical fiber's terminal end. Most preferably, the light-diffusing particles are optically transparent solid particles dispersed symmetrically or asymmetrically in an optically transparent bonding material to thereby form a light diffusion medium (LDM). The solid particles may thus be dispersed in the bonding material while the bonding material is in a liquid state to form the LDM. A mass of the LDM may thus be applied onto the terminal optical fiber end while the bonding material is in such a liquid state. Allowing the bonding material to solidify will therefore affix the light-diffusing particles to the terminal end of the optical fiber. In such a manner, optical fiber illuminators having high light throughput and diffusion may be made.